

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: A21D 13/08	A1	(11) International Publication Number: WO 95/16355 (43) International Publication Date: 22 June 1995 (22.06.95)
(21) International Application Number: PCT/HU94/00060 (22) International Filing Date: 15 December 1994 (15.12.94) (30) Priority Data: P 93 03598 15 December 1993 (15.12.93) HU (71)(72) Applicant and Inventor: VASZILY, József [HU/HU]; Maklári út 69, H-3300 Eger (HU). (74) Agent: DANUBIA; P.O. Box 198, H-1368 Budapest (HU).		(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: SUGAR-FREE CONFECTIONERY PRODUCTS (57) Abstract <p>The invention relates to sugar-free confectionery products (including fine-bakery wares and kinds of biscuits) which, in addition to the otherwise usual components of the corresponding common confectionery products, contain instead of sugar powdered milk protein in an amount of 10 to 75 % by weight related to the weight of the sugar replaced; and optionally contain sweeteners in an amount much less than usually used as sugar substitute. Sorts of salty sponge cakes corresponding to the sweet sponge cakes but containing milk protein powder, preferably skim milk powder instead of sugar also fall within the scope of the invention. The composition of the products according to the invention can be considered to meet the diabetic requirements when carbohydrate containing flavourings and stuffings are avoided. Further, the consistency assured by the composition according to the invention, i.e. the consistency-forming effect of the milk protein makes possible to prepare other dietary products, e.g. cholesterol-poor products (without egg-yolk), as well as casein-free, gluten-free or fibre-rich confectionery products, too.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LU	Luxembourg	SN	Senegal
CN	China	LV	Latvia	TD	Chad
CS	Czechoslovakia	MC	Monaco	TG	Togo
CZ	Czech Republic	MD	Republic of Moldova	TJ	Tajikistan
DE	Germany	MG	Madagascar	TT	Trinidad and Tobago
DK	Denmark	ML	Mali	UA	Ukraine
ES	Spain	MN	Mongolia	US	United States of America
FI	Finland			UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

SUGAR-FREE CONFECTIONERY PRODUCTS

This invention relates to sugar-free confectionery products, particularly to various sugar-free sweet cakes and salty sponge-cake products.

A decisively major part of confectionery (here and hereinafter including also the fine-bakery and the preparation of biscuits) falls to the preparation of sweet products. According to the practice of many centuries, these products have been prepared by using sugar or honey. Also nowadays these raw materials are being employed for the preparation of confectionery products (here, throughout the specification and in the claims "confectionery" is used in the above broader meaning, the confectionery products, fine-bakery wares and biscuits are also included). For the preparation of dietary, mainly diabetic foods, sugar and honey are replaced by other natural or artificial sweeteners (a major part of which is also carbohydrate but not saccharose).

The recipes and manner of producing the above products, among them diabetic products have been described in a number of technical and cookery books and other publications, examples of these are: László Ravasz: "Technology of Confectionery", Közgazdasági és Jogi Kiadó, 1957 and 1964; Jenő Földes and L. Ravasz: "Confectionery", Közgazdasági és Jogi Könyvkiadó, 1961; G. Zajkás and B. Póda Mrs. Gaál: "Dietary Book" Medicina, Budapest, 1986; as well as Mrs. J. Nagy and Mrs. L. Somogyi: "House Diet of Our Patients", Medicina, Budapest 1983. (All the books cited are in Hungarian).

These sugar-free (saccharose-free) foods are of high importance not only from the view-point of the diabetic population, these are significant for the nutrition of healthy people, too. Namely, it becomes always

- 2 -

better known that the more and more motion-deficient way of life caused by the developing technical level, the high calory consumption related thereto, and the obesity originating therefrom are sources or predisposing factors of many later developing illnesses. (For this latter reason and because in those cases if the products are not intended for diabetic patients, the strict requirements prescribed for the other components of diabetic products have not to be unconditionally followed, the products according to the invention are marked as "sugar-free products" instead of "diabetic products".

Thus, the problem of preparation of sugar- (and honey-) free confectionery products comes into prominence.

In this relation two broad classes of the products should be distinguished.

In one of these, the sugar, honey or sweeteners are intended only to develop the sweet taste. This is the more simple case, namely, in such cases a number of sweetening combination may be utilized to diminish any unpleasant, undesired effect (e.g. unpleasant after-taste or laxative effect) of one or other sweetener by reducing the amount thereof.

The other class is represented by the products in the preparation of which the sugar plays a consistency-forming technological role, too. The sponge-cakes represent the most characteristic examples of these products. It is particularly worth of mentioning that actually, due to the necessity of use of sugar important in forming consistency, salty sponge-cakes are not known.

Sugar-free products which correspond to those sweet confectionery products the consistency of which is formed with using sugar can be prepared only by employing a more restricted group of sweeteners, mainly carbohydrate-type sweeteners (such as fructose and sorbitol). Saccharin or

- 3 -

cyclamate e.g. cannot be utilized for consistency formation. In the major part of cases, however, the quality of the products thus obtained is not identical with that of products prepared by using sugar.

5 The use of the available sweeteners suitable to develop the consistency of confectionery products is, however, restricted by a number of factors such as: their obligatory total or partial account to the daily sugar consumption for patients suffering in diabetes (gluconone, 10 sorbitol, fructose); flatulence causing and laxative effects occurring at excessive consumption or in case of sensitiveness (gluconone, sorbitol), unpleasant by-flavour and/or after-taste; and other unfavourable effects.

15 An other problem resides in that if using sorbitol as one of the sweeteners most useful for consistency formation, products of suitable consistency may be obtained only in the case when it is used in an amount of at least 70% of the weight of the sugar to be used according to 20 the common recipe. However, due to the different sweetening ability of sugar and sorbitol the product obtained like this will be too sweet.

It is obvious from those said above that it would be advisable to eliminate or significantly reduce, 25 respectively, the utilization of the carbohydrate-type sweeteners (e.g. fructose, sorbitol) useful to form the consistency of cakes.

Thus, the object of the invention is to eliminate the above problems and deficiencies, namely, to develop 30 confectionery products, which contain no sugar and do not contain any sweetening agent at all for its replacement; or, which contain only a fraction of the amount of sweeteners usually employed in such products; further, the object of the invention is to develop non-sweet 35 products corresponding to any of those sweet products in

- 4 -

the production of which the sugar plays a consistency-forming role and therefore these latter ones were not prepared till now with a salty taste effect.

The invention is based on the recognition that
5 instead of sugar various powdered milk proteins can be utilized for the formation of the consistency of the confectionery products. Though the mechanism deciding the formation of structure is unknown, it is a fact that the preservation of the structure of the cake (e.g. the
10 looseness of the cake, the sponginess of sponge-cakes) and the retention of structure during cooling or storage are adequate to those of the products prepared with sugar.

As milk proteins e.g. milk powder or powdered prod-
15 ucts containing milk protein obtained as side products in the manufacturing of milk products may be used, e.g. whey powder, buttermilk powder or lactose-free or casein-free powdered milk protein preparations and so on.

From the milk proteins milk powder has already been
20 used as an ingredient of confectionery products, however, it was used beside sugar not instead of this, it replaced the milk, optionally simultaneously an amount of a liquid corresponding to the usual water content of the milk was used, too. The amount of the milk powder used and the
25 site of its employment in the production line are determined by the fact that the milk powder is used instead of sugar. Thereby this use is distinguished from the use as a milk substitute.

Other milk protein preparations have not been used
30 till now in the confectionery products and their other utilizations are also rather restricted, mainly they are utilized as animal feed.

The milk proteins are used as sugar substitutes in an amount of 10 to 75% of the weight of the sugar
35 normally employed; this amount mainly depends on the type

- 5 -

of the product and within this on the given particular products. (This problem will be touched hereinafter.)

Based on the recognition according to the invention, the most various types of confectionery products
5 can be produced.

According to the confectionery classification sorts of cakes are divided to the following broad classes (J. Földes, L. Ravasz: cited above, page 85).

- A) Cakes with yeast:
10 kneaded cakes with yeast,
stirred cakes with yeast,
folded cakes with yeast,
crispy cakes with yeast,
- B) Whipped cakes (within these, whipped sponge-
15 cakes):
- C) Shortbreads:
kneaded shortbreads,
stirred shortbreads.
- D) Buttered cakes.
- 20 E) Rolled cakes.
- F) Other cakes.

Based on the recognition according to the invention any of the above cake types can be prepared in a sugar-free form containing no or only a small amount of carbohydrate-type sweeteners. It is emphasized that the
25 whipped cakes can be prepared with a salty taste, too. It should be noted, however, that though folded cakes with yeast and buttered cakes can be prepared by the method according to the invention, this does not result in any
30 considerable advantage because of the character, mainly of the low sugar content of the products. Thus, these two groups will not be dealt with hereinafter.

It is furthermore noted that whey protein cannot be used for producing rolled cakes (marzipan and similar
35 products) since this would lead to taste defect. However,

- 6 -

other milk proteins can be used for the preparation of these products, too.

The way of the preparation of cake products is quite similar to that of the preparation of the corresponding usual, sugar-containing products with the following exceptions:

Instead of sugar a milk protein is used in an amount given in Table 1 (given in percentage related to the weight of the usually employed sugar).

10

Table 1

<u>Type of cake</u>		<u>Milk protein used (%)</u>	
		<u>Minimum</u>	<u>Preferred</u>
Cakes with yeast:			
	kneaded cakes with yeast	20	50
15	stirred cakes with yeast	20	50
	crispy cakes with yeast	10	50
	Whipped cakes	35	50
Shortbreads:			
	kneaded shortbreads	25	50
20	stirred shortbreads	25	50
	Rolled cakes	25	50
	Other cakes	20	50

In several cases the baking time of the products according to the invention is somewhat longer than that of the corresponding usual products, the selection of the suitable baking time falls within the knowledge of a person skilled in the art.

When preparing crispy cakes with yeast, kneaded shortbreads, stirred shortbreads and biscuits the fat content should be somewhat increased. In addition to the amount indicated in the usual recipe, an amount of fat is commonly used which is equal to the difference between the weight of the sugar given in the usual recipe and of the milk protein employed.

If desired, beside the milk protein a small amount

- 7 -

of a sweetener, e.g. cyclamate or polysweet may be added to the cakes, particularly e.g. when whey protein is used or pronouncedly sweet cake is desired. However, the amount of the sweetener employed like this is much lower
5 than the amount required for the cake prepared without milk protein; furthermore a sweetener being unsuitable for consistency formation, e.g. cyclamate can well be employed in such cases.

The whipped cakes always contain an emulsifying
10 agent of food quality (this is present in the usual whipped cakes only in desired case).

The confectionery products according to the invention may contain any flavouring agent, additive or stuffing used in the common confectionery products. Their
15 use is limited only by a possibly intended dietary utilization.

It is worth of emphasizing that the confectionery products according to the invention can be prepared so as to meet the requirements set for diabetic products but
20 also for many other kinds of dietary products, i.e. the sugar-replacing, consistency-forming effect of the milk proteins may be utilized also in the dietary confectionery products prepared from raw materials differing in some respect from the raw materials of the usual products.
25

Thus, in addition to the diabetic products, if desired, the following ones may be produced:

- cholesterol-poor products may be prepared by using egg-white instead of egg; if desired, these
30 products may contain supplementary oil;

- fibre-rich products may be produced by mixing fibre-rich materials, e.g. bran and/or, when the character of the product makes it possible, appropriately processed, chopped greens, vegetables and/or fruits into
35 the cake (common stuffings are not counted hereto);

- 8 -

- lactose-free products may be obtained by using lactose-free milk proteins well known for a person skilled in the art;

- products useful for coeliac patients can be prepared by using gluten-free flour, e.g. maize flour, potato flour, rice flour, flour of dry peas or soy flour or any desired mixture thereof instead of flour; within these, a gluten-free sponge cake bread may also be prepared similarly to the preparation of the whipped salty products.

It is furthermore mentioned that the diabetic character of some of the confectionery products can be increased by preparing them with Graham's meal further to the elimination of sugar.

With the composition according to the invention, by avoiding the carbohydrate-containing flavouring agents and stuffings, the products according to the invention can be considered to be diabetic; further, the consistency assured by the composition according to the invention namely, the consistency-forming effect of the milk proteins makes possible to produce according to the invention other dietary products, e.g. cholesterol-poor, casein-free, gluten-free or fibre-rich confectionery products.

Thus, according to the invention products with good consistency and taste, meeting the requirements of other diets beside the diabetic one can be prepared, and if desired, the products can satisfy the requirements of more various diets simultaneously. Within this scope, it is particularly important to develop diabetic and simultaneously cholesterol-poor confectionery products of good quality. It is important not only because it frequently occurs that aging people simultaneously suffer from diabetes and high cholesterol level, too, but this combination is worth of mentioning from the technological

- 9 -

point of view, too. Namely, the separate production of products without sugar (or carbohydrate-type sweeteners) and without egg-yolk is also a difficult task, especially when preparing whipped products (e.g. sponge cakes),
5 however, it is even more difficult to solve these tasks simultaneously.

Summing up, the advantage of the invention consists in that various confectionery products may be prepared in a form free of or poor in sugar and carbohydrate-type
10 sweeteners and having a taste and consistency adequate to those of common sugar-containing products. These products are useful both for patients suffering in diabetes and for healthy persons who want to restrict their sugar consumption.

15 The salty sponge cakes containing milk protein powder, preferably skim milk powder instead of sugar and in other respects corresponding to the sweet sponge cakes also fall within the scope of the invention.

As the preparation of the products according to the
20 invention does not cause any difficulty to one skilled in the art on the basis of well known processes for the preparation of the corresponding sugar-containing products and using the teaching given in the preceding part of this description (and considering the extreme variety of
25 the possible products) the description of their preparation is not given here. However, a general description of the production of salty sponge cake will be given below since this product is entirely novel.

For preparing light whipped salty sponge cakes, an
30 amount of whole eggs usually employed in the preparation of sponge cake or, in the cholesterol-poor variant, egg-white or, if desired, a mixture of egg-white and oil of a total amount corresponding to the weight of the whole egg, wherein the amount of oil is at most 45% by weight
35 calculated to the egg-white, further, powdered milk,

- 10 -

protein in an amount of 10 to 75% by weight of the sugar content of usual sponge cake, preferably skim milk powder, water or liquid flavour and emulsifying agent of food quality, preferably 1.6 to 2.0% by weight of Jilk
5 biscuit paste (Aromatic AB, Stockholm, Sweden) used also in the production of common sponge cake are stirred to a foam by using a high-speed stirrer, thereafter the flour and, if desired, solid flavours and salt or salty flavour as well as a leaving agent, preferably sodium hydrogen
10 carbonate or baking powder are mixed in at a medium revolution number. Thereafter, the cake is placed into an appropriate mould and baked.

According to a preferred embodiment, the light whipped salty sponge cake contains 35 to 45% by weight of
15 whole egg or egg-white or 27 to 33% by weight of egg-white and 8 to 12% by weight of edible oil; 9 to 15% by weight of skim milk powder; 10 to 16% by weight of water; 1.6 to 2.0% by weight of an emulsifying agent of food quality; 29 to 32% by weight of flour; 0.3 to 0.7% by
20 weight of salt or a salt-containing flavour in an amount corresponding thereto or a mixture of salt and flavour; as well as 0.3 to 0.7% by weight of a leaving agent, preferably sodium hydrogen carbonate or baking powder; and, if desired, a flavouring ingredient instead of a
25 part of or of the total amount of the water and/or instead of a part of the flour.

The variety of flavouring of the products according to the invention is exemplified on the flavouring of salty sponge cake which, due to its neutral character, is
30 compatible with many tastes. [The illustration of sweet flavoring ingredients (flavours) is omitted because they are well known.] It is noted, however, that the flavour should meet also the requirements determined by the given diet if a product intended to a dietary purpose is
35 produced.

- 11 -

- For flavouring materials of animal or plant origin may equally be used in an amount corresponding to the desired taste. On using liquid flavouring ingredients, the water component of the cake is reduced by the amount of this liquid ingredient, on using a solid flavouring ingredient the amount of the flour component is reduced. (When the consistency of the component is between liquid and solid, the water and flour amounts are proportionally diminished.)
- Some possible variants of suitable flavouring ingredients are described hereinbelow. [Depending on the desired type of the product these flavouring ingredients may be utilized in a coarse or finely ground (e.g. milled) or pulpified form.]
- Greens, vegetables such as carrot, kohlrabi, celery, radish kinds (rawly grated, steamed, pulpified after cooling); cabbage kinds (steamed in a slightly saltish juice, pulpified after cooling); tomato (finely cut in raw state without its skin or in the form of tomato juice); haricot, green peas, spinach, asparagus, cauliflower, pumpkin kinds, turnip (steamed in a slightly saltish juice, pulpified after cooling); onion kinds (stewed in a little oil or finely sliced, cut up); beetroot (cooked, cooled, finely grated); horse-radish (freshly grated); parsley (raw, in a very finely cut state); mushroom (steamed, finely sliced, cut up); from among the milk products the hard, gratable cheeses and half-fatty curds; fragrant spices and their grists; sweet marjoran, nutmeg, ground caraway, bay leaf, dill; hot spices: curry, pepper, sweet pepper; oily-seeds: nut, hazelnut, almond, coco-nut, sunflower, pumpkin seed, sesame-seed, pistacia grists; sweet chestnut (cooked in its shell, finely grated); meats, hasterlets, fishes, sausages, cracklings (finely milled, also in the form of conserves).

- 12 -

The invention is illustrated in detail by the following non-limiting Examples.

Example 1

Light whipped salty sponge cake base

5 42.0% by weight of whole egg, 12.3% by weight of skim milk, 1.4% by weight of water, 1.8% by weight of Jilk biscuit paste (Aromatic AB, Stockholm, Sweden) are placed in the egg-whisk pan of Sabaria 40 mixer, the machine is adjusted to 320 revolutions/minute (rpm) and
10 its content is stirred to a foam during 4 to 6 minutes; then the stirrer is adjusted to 120 rpm, and 31.5% by weight of flour, 0.5% by weight of flavour and 0.5% by weight of sodium hydrogen carbonate are added, then the cake is homogenized. Then, the machine is adjusted to the
15 highest speed again, the cake is stirred for 6 to 7 seconds and is filled into fatted and flour-dredged mould up to 90% volume, then the cake is baked in an oven at 190 to 200 °C.

Example 2

20 **Cholesterol-poor variant of the light whipped salty sponge cake base**

After stirring 31.5% by weight of egg-white, 10.5 % by weight of edible oil, 12.3% by weight of skim milk powder, 11.4% by weight of water and 1.8% by weight of
25 Jilk biscuit paste until foamy as described in Example 1, 31.5% by weight of flour, 0.5% by weight of Delikát food flavour and 0.5% by weight of sodium hydrogen carbonate are added, then the mixture is homogenized, mixed, portioned and baked.

30 **Example 3**

Flavoured variant of light whipped salty sponge cake

A mixture containing 40.3% by weight of whole egg, 11.7% by weight of skim milk powder, 10.8% by weight of
35 water, 1.8% by weight of Jilk biscuit paste and 4.2% by

- 13 -

weight of curry is stirred until foamy as described in Example 1, then 30.2% by weight of flour, 0.5% by weight of Vegeta food flavour and 0.5% by weight of sodium hydrogen carbonate are mixed to it, the mixture is
5 homogenized, mixed, portioned and baked.

Example 4**Cholesterol-poor, flavoured variant of light whipped sponge cake**

A mixture containing 30.5% by weight of egg-white,
10 10.2% by weight of oil, 12.0% by weight of skim milk powder, 5.6% by weight of water, 7.3% by weight of ground green peas and 1.8% by weight of Jilk biscuit paste is mixed until foamy as described in Example 1, then 29.5% by weight of flour, 0.5% by weight of salt and
15 0.5% by weight of sodium hydrogen carbonate are added and the mixture is homogenized, mixed, portioned and baked.

Example 5**Flavoured variant of light whipped salty sponge cake without using water**

20 A mixture containing 40.0% by weight of whole egg, 11.8% by weight of skim milk powder, 16.3% by weight of tomato, 1.8% by weight of Jilk biscuit paste is mixed until foamy as described in Example 1, 29.0% by weight of flour, 0.6% by weight of Vegeta food flavour and 0.5
25 % by weight of sodium hydrogen carbonate are added, then the mixture is homogenized, mixed, smeared with a knife or on machine to a thickness required for rolls and baked.

Example 6

30 Oily seeds flavoured variant of light whipped salty sponge cake

After stirring a mixture containing 42.0% by weight of whole egg, 12.3% by weight of skim milk power, 11.4% by weight of water and 1.8% by weight of Jilk biscuit
35 paste until foamy as described in Example 1, 24.5% by

- 14 -

weight of flour, 7.0% by weight of ground hazel, 0.5% by weight of Delikát food flavour and 0.5% by weight of sodium hydrogen carbonate are added, the mixture is homogenized, mixed, portioned and baked.

- 15 -

Claims

1. Sugar-free confectionery products, which
c o m p r i s e beside their usual components instead of
5 sugar powdered milk protein in an amount of 10 to 75%
related to the weight of the sugar normally used and
optionally contain a sweetening agent in an amount less
than normally used instead of sugar.

2. A product as claimed in claim 1, which
10 c o m p r i s e s instead of sugar a milk protein in an
amount of 50% related to the weight of the sugar used
normally.

3. A product as claimed in claim 1 or claim 2,
which c o m p r i s e s milk powder, whey protein,
15 lactose-free milk protein, buttermilk powder or casein-
-poor milk protein as milk protein.

4. A product as claimed in any of the claims 1 to
3, which c o m p r i s e s skim milk powder as milk
protein.

20 5. A product as claimed in claim 1, which
c o m p r i s e s the components of the usual sponge
cake by using a milk protein and emulsifying agent
instead of sugar; and the said product is salty
flavoured.

25 6. A product as claimed in claim 5, which
c o m p r i s e s skim milk powder as milk protein.

7. A product as claimed in claim 1, which
c o m p r i s e s the components of kneaded cakes with
yeast by replacing the sugar content thereof with a milk
30 protein in an amount of at least 20% related to the
weight of the sugar replaced.

8. A product as claimed in claim 1, which
c o m p r i s e s the components of stirred cakes with
yeast by replacing the sugar content thereof with a milk
35 protein in an amount of at least 20% related to the

- 16 -

weight of the sugar replaced.

9. A product as claimed in claim 1, which
c o m p r i s e s the components of crispy cakes with
yeast by replacing the sugar content thereof with a milk
5 protein in an amount of at least 10% related to the
weight of the sugar replaced; as well as a fat content
increased by an amount corresponding to the difference
between the sugar content of the adequate sugar-contain-
ing product and the amount of milk protein used in the
10 product.

10. A product as claimed in claim 1, which
c o m p r i s e s the components of whipped products by
replacing the sugar content thereof with a milk protein
in an amount of at least 35% related to the weight of the
15 sugar replaced.

11. A product as claimed in claim 1, which
c o m p r i s e s the components of kneaded shortbreads
by replacing the sugar content thereof with a milk
protein in an amount of at least 25% related to the
20 weight of the sugar replaced, as well as a fat content
increased by an amount corresponding to the difference
between the sugar content of the corresponding sugar-con-
taining product and the amount of milk protein used in
the product.

25 12. A product as claimed in claim 1, which
c o m p r i s e s the components of stirred shortbreads
by replacing the sugar content thereof with a milk
protein in an amount of at least 25% related to the
weight of the sugar replaced, as well as a fat content
30 increased by an amount corresponding to the difference
between the sugar content of the corresponding sugar-con-
taining product and the amount of milk protein used in
the product.

13. A product as claimed in claim 1, which
35 c o m p r i s e s the components of rolled cakes by

- 17 -

replacing the sugar content thereof with a milk protein in an amount of at least 25% related to the weight of the sugar replaced, with the proviso that it cannot contain whey protein as milk protein.

5 14. A product as claimed in claim 1, which
c o m p r i s e s the components of the corresponding
other cakes, preferably biscuits, by replacing the sugar
content thereof with a milk protein in an amount of at
least 20% related to the weight of the sugar replaced; as
10 well as in case of biscuits with a fat content increased
by an amount corresponding to the difference between the
sugar content of the corresponding sugar containing
product and the milk protein amount employed in the
product.

15 15. A cholesterol-poor product as claimed in any of
the claims 1 to 4, which c o m p r i s e s egg-white
and, if desired, oil instead of the whole egg.

 16. A diabetic product as claimed in any of the
claims 1 to 4, which c o m p r i s e s Graham's flour
20 instead of flour.

 17. A gluten-free product as claimed in any of the
claims 1 to 4, which c o m p r i s e s maize flour, rice
flour, potato flour, pea flour or soy flour or a mixture
thereof instead of flour.

25 18. A fibre-rich product, as claimed in any of the
claims 1 to 4, which c o m p r i s e s a flour of total
reduction or fibre-rich component, preferably bran
instead of a part of the flour.

 19. A light whipped salty sponge cake, which
30 c o m p r i s e s 35 to 45% by weight of whole egg or
egg-white or 27 to 33% by weight of egg-white and 8 to
12% by weight of edible oil; 9 to 15% by weight of skim
milk powder; 10 to 16% by weight of water; 1.6 to 2.0% by
weight of an emulsifying agent of food quality; 29 to 32%
35 by weight of flour; 0.3 to 0.7% by weight of salt or a

- 18 -

salt-containing flavour in an amount corresponding thereto or a mixture of salt and flavour; as well as 0.3 to 0.7% by weight of a leaving agent, preferably sodium hydrogen carbonate or baking powder; and, if desired, a
5 flavouring ingredient instead of a part of or of the total amount of the water and/or instead of a part of the flour.

20. A sponge cake as claimed in claim 19, which
c o m p r i s e s as flavouring ingredient(s) one or
10 more member(s) of a group consisting of: greens and vegetables such as carrot, kohlrabi, celery, kinds of radish, kinds of cabbage, tomato, haricot, green peas, spinach, asparagus, cauliflower, pumpkin sorts, white
15 beet, kinds of onion, beetroot, horse-radish and mushroom; milk products such as hard, gratable cheeses and half-fatty curds; fragrant spices and grists thereof; e.g. marjoran, nutmeg, ground caraway, bay-leaf and dill; hot spices as curry, pepper and red pepper; oily seeds
20 such as nut, hazel, almond, coco-nut, sunflower, pumpkin-seeds, sesame-seed and pistacia grists; sweet chestnut; as well as meats, hastelets, fishes, sausages and cracklings.

21. The use of milk proteins as sugar substitutes in preparing confectionary products.

25 22. The use of claim 21 in preparing sponge cake.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/HU 94/00060

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁶: A 21 D 13/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁶: A 21 D 13/00, 13/02, 13/04, 13/06, 13/08, 2/26, 2/34

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 23 40 333 A1 (KLOSTERFRAU BERLIN) 30 January 1975	1-4, 21, 22
A	(30.01.75), claims, example 1.	5-14
A	US 4 185 127 A (S.B.RADLOVE) 22 January 1980 (22.01.80), claims, column 9, lines 24-43.	1-20
A	FR 2 405 651 A (F.HERRNDOBLER) 11 May 1979 (11.05.79), claims.	1-20
A	US 4 428 971 A (B.HAVETTE et al.) 31 January 1984 (31.01.84), totality.	1-20

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

10 April 1995 (10.04.95)

Date of mailing of the international search report

09 May 1995 (09.05.95)

Name and mailing address of the ISA/AT
AUSTRIAN PATENT OFFICE
Kohlmarkt 8-10
A-1014 Vienna
Facsimile No. 1/53424/535

Authorized officer

Irmeler e.h.
Telephone No. 1/5337058/34

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/HU94/00060

Im Recherchenbericht angeführtes Patentedokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
DE A1 2340333	30-01-75	AT A 7962/73	15-01-75
		AT B 325775	10-11-75
		AU A1 70958/74	08-01-76
		BE A1 816563	16-10-74
		CA A1 1034422	11-07-78
		CH A 580919	29-10-76
		CH A 593616	15-12-77
		DD C 112347	05-04-75
		DE A1 2433266	24-04-75
		ES A1 428205	16-08-76
		FR A5 2237401	07-02-75
		GB A 1438691	09-06-76
		JP A2 50048170	30-04-75
		LU A 68000	11-04-75
		US A 3976800	24-08-76
		ZA A 7403930	25-06-75
		LU A 69003	20-08-75
US A 4185127	22-01-80	US A 4277504	07-07-81
		US A 4379174	05-04-83
FR A 2405651		AT A 6122/78	15-11-79
		AT B 357131	25-06-80
		BE A1 869941	18-12-78
		CH A 637005	15-07-83
		DE A1 2738403	01-03-79
		FR A1 2405651	11-05-79
		FR B3 2405651	12-06-81
		GB A1 2001517	07-02-79
		GB B2 2001517	26-05-82
		IT A0 7827050	25-08-78
		IT A 1098248	07-09-85
		JP A2 54064654	24-05-79
		NL A 7808634	27-02-79
US A 4428971	31-01-84	AR A1 231377	30-11-84
		AT E 16679	15-12-85
		AU A1 85959/82	03-02-83
		AU B2 549128	16-01-86
		CA A1 1185827	23-04-85
		DE C0 3267677	09-01-86
		EP A1 71054	09-02-83
		EP B1 71054	27-11-85
		ES A1 514461	16-06-84
		ES A5 514461	29-06-84
		ES A1 8405255	16-09-84
		FI A0 822553	20-07-82
		FI A 822553	01-02-83
		FI B 71466	10-10-86
		FI C 71466	19-01-87
		FR A1 2510358	04-02-83
		FR B1 2510358	06-01-84
		JP A2 58028224	19-02-83
		JP B4 62005566	05-02-87
		MX U 7653	07-06-90
		NO A 822397	31-01-83
		NO B 155472	29-12-86
		NO C 155472	08-04-87